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AGENCY

INSIGHT

You said it . . .

To: The Hon. K.R. Kowalski
Minister, Alberta Public Safety
Services

Re: Disaster Assistance — Loss and
Damage
Edmonton Area Tornado — July
31, 1987

Thank you for your letter of April 25,
1989, to our Mr. Wordie and the
cheque for \$1,104,492.

Tornadoes are extremely capricious
in their selection of who and what to
damage and destroy. Unfortunately,
we at Stelco Steel, Edmonton Works
were selected on July 31, 1987, and
suffered damage to plant and trauma
to people that might have been
extremely difficult to recover from.

The rapid and effective responses of
the Alberta government, our people

and community permitted us to rec-
over fully. The assistance permitted
us to feel and act in a manner that our
place in the competitive arena was
not being swept away with the torn-
ado. We proceeded with full confi-
dence that the people of Alberta
wanted us back in the game without
penalty after this misfortune.

Finally, I would also like to say that
the communications with the people
in your Ministry have been a credit to
a highly professional group.

H.J. Lepp
General Manager, Western Region
Stelco Steel

Insight is not your run-of-the-mill
provincial or state emergency
management newsletter. The first
issue of the Alberta Public Safety
Services (APSS) newsletter
approaches most national publica-
tions in quality and content, and if

this standard is maintained, emerg-
ency managers, planners and rese-
archers everywhere will want to
receive this quarterly periodical.

The editors' declaration of purpose
states that Insight "aims to inform
readers about current developments
concerning topics which relate to
the mandate of APSS: to prepare for,
respond to, and follow up on human-
caused or natural disasters in Alberta.
This mandate includes activities in
the areas of disaster services and
management, as well as the handling,
offering and transporting of danger-
ous goods."

. . . the inaugural issue meets this
directive well.

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server
University of Colorado
Boulder, Colorado

Insight is published quarterly by Alberta Public
Safety Services (APSS). The publication aims to
inform readers about current developments con-
cerning topics which relate to the mandate of APSS:
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On the Cover: Clean-up crews scrub the
junction of Highways 637 and 831 northeast of
Edmonton, where 800 litres of sodium dichro-
mate spilled intermittently from Waskataneau
to Fort McMurray last March. A 40-km section
of highway where the major part of the spill
was concentrated was closed for almost three
weeks. Photo by Jim Cochrane, The Edmonton
Journal.

Alberta
PUBLIC SAFETY SERVICES



EMERGENCY PREPAREDNESS CANADA

The Hon. Bill McKnight (left), Minister of National Defence and Minister responsible for Emergency Preparedness Canada, talks with the Hon. Ken Kowalski (right), Minister of Alberta Public Safety Services, at the PEI conference.

Ministers meet to discuss emergency preparedness issues

Federal and Provincial Ministers responsible for emergency preparedness met in Prince Edward Island in June. The Hon. Ken Kowalski, Minister, Alberta Public Safety Services, represented the Alberta Government. *Insight* spoke to Mr. Kowalski on his return to Alberta.

Mr. Kowalski, why was it necessary for you and your colleagues from all over Canada to meet?

For many months, the number one concern amongst all Canadians has been, and continues to be, the environment. The agenda set for the June meeting was important to all of us because most of our work impacts the environment.

It gave me an opportunity to discuss the new Government of Canada Acts concerned with emergency preparedness. The agenda covered the work of the Major Industrial Accident Co-ordinating Committee (MIACC), the importance of preventing and minimizing the effect of toxic spills and the complex arrangements for co-operation between the Federal and Provincial Governments in response to any man-made or natural disasters.

Were you able to make progress towards reducing toxic spills on our highways?

The short answer is yes. This is a complicated issue. We should not be concerned with trying to control the problem in Alberta only. In fact, it is not even a Canadian or even a North American problem. International trade is more and more widespread. A container on the Alberta roads one day could be in Europe, Japan or Mexico two weeks later. The basic regulations for the transportation of dangerous goods must be the same everywhere. It is these problems which we must solve. That is why meetings such as the one we had in Prince Edward Island are so important and valuable to us all.

Do you think that these meetings should become a regular event?

Yes, I do. So many issues were exposed at the meeting which deeply concerned us all that I proposed we should meet on a regular basis. This proposal was unanimously agreed to. I then suggested we should meet next year in Alberta. We will now start to plan the next meeting.

A-Train use being examined

A survey conducted last spring by Esso Petroleum Canada has shown that A-train truck configurations were involved in a significantly higher proportion of roll-over incidents in the Prairie provinces last year compared with other types of carriers. As a result, Esso will be working with the trucking industry and government departments to develop a viable solution to either remove this type of unit from service as rapidly as possible, or alternatively convert it to a more stable configuration during the next year.

Esso undertook the survey of all major bulk petroleum carriers operating in the Prairies after the company experienced an increase in the number of truck roll-over incidents associated with bulk fuel shipments. In the Prairie provinces, Esso relies exclusively on a number of hired carriers to transport petroleum products.

No flood

The June issue of *Insight* included a human interest article about a Slave Lake resident who was predicting a flood would occur in his community between July 2 and 5. He based his theory on observations of hoar frost last winter, a method he said helped him predict the flood in 1988.

Happily, there was no flood in Slave Lake during the first week of July. The prediction, however, was in one way a reminder of the ever-present need to be prepared for disasters.



JOHN SCHUTZ

Chemical Spills: An emergency response challenge

This issue of Insight examines various aspects of the theme Chemical Spills: An Emergency Response Challenge. It starts in Alaska, with a compelling eye-witness account of the Exxon Valdez oil spill and the lessons to be learned there, which apply to emergency response personnel everywhere. Closer to home, Insight covers, amongst other things, the evolution of polychlorinated biphenyls (PCBs) into "a political waste" and includes a guide to help communities plan for dangerous goods incidents.

Dangerous goods incidents are not a new phenomenon. What is relatively new, however, since February 1986 in Alberta, is the legal requirement under federal and provincial statutes to report any spill of dangerous goods being transported by road. Since then, an increasingly fine-tuned and co-operative response system has been co-ordinated by first responders, different levels of government and industry.

Whenever a dangerous goods spill occurs, the municipality involved plus a number of government departments and other agencies have responsibilities to fulfil to protect lives, the environment and property, depending on the circumstances and nature of the spill. First, the trucker is required by law to report the spill to the local police, who notify agencies such as the fire department, Alberta Public Safety Services (APSS) and Alberta Environment.

While each incident is different,

APSS follows a standard routine when one occurs. Last March, for example, when 800 litres of sodium dichromate spilled intermittently along Highways 831 and 63 from Waskatenau to Fort McMurray, forcing their closure, APSS notified the municipalities affected, Transport Canada's CANUTEC (Canadian Transportation Emergency Centre) in Ottawa, and the companies involved, including the shipper, receiver, carrier and manufacturer. As a standard routine, APSS and Alberta Environment also double check with each other when informed of a spill.

APSS sent a dangerous goods inspector to the scene to determine if any violations of regulations under the Transportation of Dangerous Goods Control Act had occurred. As part of his detailed investigation, the inspector drove along the entire route where the spill had occurred, providing one of the first detailed reviews of the spill. In the interest of public safety, personnel from APSS and local Boards of Health also visited residents along the highway to inform them about the spill and clean-up operation.

There are a number of other APSS resources that can have a direct bearing during a dangerous goods incident: first responders at the incident, for example, will have likely received training from the APSS Training School, which offers a number of dangerous goods awareness courses, and assists instructors from emergency response organizations to

develop training programs for incidents. The Compliance Information Centre, which has a 24-hour telephone service, answers calls about any aspect of the transportation of dangerous goods and legislation, and can provide data about specific chemicals.

Chemical spills present many emergency response challenges, but one over-rides all others. "In any planning or response activity regarding a chemical spill, the greatest challenge you have to face is time," says Shaun Hammond, APSS Director of Program Operations for Dangerous Goods. "With floods or weather warnings, you have a certain amount of time to prepare, but if you have any kind of a leak of gases or flammable liquids, for example, you have no time at all."

This lack of time has profound implications for planning and training. "Given that you have no time for planning, you are into an incident phase almost directly, where you have to tailor your response in such a way as to meet the changing circumstances of the incident," Mr. Hammond says. It also means that first responders must be trained in some basic rules on "what to do, what not to do, and how to assess the situation, depending on the product involved."

To be able to do this, Mr. Hammond says it takes a combination of "a certain kind of mind," one that can do problem analysis quickly and thoroughly, and a great deal of experience.

This oil-covered beach on Green Island has already been cleaned, but more oil came back with the tides.



DEAN MONTEREY

Another major challenge of a different sort lies in communications with the public. Scientists and the public are separated "by a chasm, not a gap," Mr. Hammond says. On one side, scientists tend to look at actual risk situations, whereas the public "looks for an absolute guarantee of no risk." The classic case, he says, is the debate over PCBs. Ironically, Mr. Hammond says, the public is prepared to accept the idea of 30,000 litres of gasoline moving through their community but would not be at all amenable to even 1,000th the amount of PCBs being transported, even though the risk is so much greater with gasoline.

"The challenge for emergency response people and the legislation is to bridge that chasm between actual and perceived risk and present a balanced point of view in terms the public can understand."

Coming Up in *Insight*

Dangerous Goods Support Plan

When dangerous goods incidents occur, municipalities have the initial responsibility to respond. As well, there are many provincial resources which municipalities can access to assist their response efforts. Alberta Public Safety Services is currently developing a support plan to help municipalities clarify what provincial resources are available, along with the responsibilities and procedures of government departments. Watch for details in upcoming issues.

Sad lessons from Valdez

On the clear night of March 24, the supertanker Exxon Valdez rammed the well-marked Bligh Reef in the pristine and wildlife-rich Prince William Sound on the Alaska coast. The tanker had strayed far from shipping lanes to avoid ice. As the tanker hit the reef, its wheel was in the hands of a third mate who was not certified to pilot the ship in the sound. The captain was not on the bridge at the time; he was later charged with three misdemeanors, including operating a boat while intoxicated, and three felony counts of second-degree criminal mischief. Shortly before the accident, the U.S. Coast Guard lost track of the ship on its radar.

As the supertanker lay stranded, its hull gashed by the rocks on the reef, an estimated 40 million litres of North Slope crude oil leaked into the water. There followed what one newspaper described as "errors, hesitation and folly" while decisions were made by various agencies on how to deal with the worst oil spill in U.S. history. In the meantime, high winds and strong currents drove the oil into surrounding islands.

By June, the U.S. Fish and Wildlife Service reported recovering almost 25,000 dead sea birds, a fraction of the total killed, plus 768 sea otters and 55 bald eagles. By the end of July, Exxon Corp. estimated it had spent more than \$600 million on the clean-up, and set aside double that to cover other costs. Beaches are scrubbed and re-scrubbed, but the oil keeps coming back with the tides.

Five days after the spill, Dean Monterey, like a lot of other people, was

enroute to Valdez. Mr. Monterey works for British Columbia's Ministry of Solicitor General as the manager of the coastal sector for the Provincial Emergency Program. He was sent by the British Columbia Government to be the province's representative, particularly to monitor the oil movement in the interest of protecting the Queen Charlotte Islands. Tar balls from the spill could possibly reach the islands next spring and major contingency planning has been completed to deal with their impact.

In a telephone interview in mid-June, *Insight* talked to a weary Mr. Monterey about his experiences in Valdez, and the lessons to be learned for disaster management. He had just returned from his second trip to Valdez, this time on a fact-finding mission as chairman of the Joint Task Force Response Sub-committee on Oil Spills set up by Alaska, British Columbia, Washington and Oregon. Mr. Monterey vividly remembers his first glimpse of the worst oil spill in U.S. history.

"Looking out the window of the airliner at 10,000 feet, my first impression was one of amazement. Never had I seen such dramatic country. My love for Alaska was instant. As we descended into Anchorage, our flight path took us over Prince William Sound, my ultimate destination.

"A silence spread throughout the 737 as more and more passengers spotted the oil spill. Looking out the starboard windows, I could see the



DEAN MONTEREY

Exxon Valdez appearing for all the world like a toy in a bath tub. The slick streaming from it was huge. Looking out the port side one could not see the end of the slick. The scope of the spill started to sink in when I took into consideration the size of the vessel, the amount of oil estimated to have been spilled, and the fact I was at 10,000 feet! My heart sank."

Even after this second trip to Valdez in June, Mr. Monterey had trouble believing his eyes. The sheer size of the operation, he said, is "completely beyond comprehension. It's massive. There are more than 10,000 employees for Exxon working on the beaches right now. There are over 750 ships and over 60 aircraft spread over 800 km of Alaska coastline."

On his second trip, Mr. Monterey flew over one of the worst hit islands, a place he had visited shortly after the spill, and found that the clean-up crews were still there, scrubbing, 81 days later. "It's because there is that much oil," he said. "People don't understand how much oil there really is and how hard it is to collect. When we landed on one beach that had supposedly been treated, it was worse than the worst oiling we have ever had on the West Coast."

Insight : Mr. Monterey, what are the lessons to be learned from Valdez?

The list of lessons learned is just phenomenally long, and they keep cropping up each day. I've learned that the only way to understand major emergency operations is to observe every opportunity you can. The amount of knowledge gained from first-hand experience should never be underestimated. I learned

that when the City of Calgary sent me to Edmonton's tornado, and had it reinforced by my Alaska trips.

The one major lesson that I have learned as chairman of the response sub-committee is that prevention is the key issue, not response, and that is what I will recommend as the chairman.

Another thing that we have learned is that people do not take into account the amount of logistics involved. Exxon estimates right now that the ratio of support staff to field operation staff is seven to one. So for every person on the beach cleaning oil, there are seven in support of that person. There are also public health issues, the issue of prostitutes moving into the town, and there is increased crime . . . the list goes on and on. The lesson here is to establish the most comprehensive logistical resources system that you can, ahead of time.

You mentioned that your first trip to Alaska was what you described as "a whirlwind of meetings, flights, meetings, flights and more meetings," travelling between command posts set up by Exxon, the U.S. Coast Guard, the Alyeska Pipeline Service Co., the Division of Emergency Services, the Division of Environmental Conservation, National Oceanic & Atmospheric Administration and others.

What I've learned is that multi-agencies working together out of separate command posts does not work. There are some problems with the idea of a single headquarters, and I'm beginning to understand that (particularly since evidence is being gathered for lawsuits). That still does not negate the necessity for having

one war room, or situation room, where decision makers could be situated. They can then turn to each other and say, "Well, what do you think about this? This is the information, what can we best do with it?"

I think if we can understand how to separate the operation from the overall situation, and make a clear definition of the operation — this is how we will do it — and use that as the single command post idea, that would be a solution right there. In essence, the approach to a disaster or an emergency should be no different than day-to-day operations. I have no doubt that if it had been a major earthquake event in Valdez, all those players would have been together. Because there is litigation involved in the oil spill, the players do not want to work together, and that is detrimental to an operation.

Also, very clear roles and responsibilities for environmental emergencies have to be determined ahead of time. One of our problems on the West coast and one of the problems in Valdez is legislation: who owns the problem, who's in charge, is not that clear. People may stand back and say the coast guard is in charge, but that is not necessarily so. It is quite often the polluter's responsibility, with the coast guard monitoring it. Who owns the shoreline? That's a grey area that has to be looked at, and all environmental emergency legislation has to be examined.

Was there a plan in place?

There was a contingency plan, but it had not been exercised. Industry stated that there was no way in anybody's imagination that this could happen. So I think the lesson here is

that contingency planning must be based on worst case scenarios, absolutely worst case scenarios. It cannot be based on isolated incidents. If a tanker carries 43 million litres of oil, planning for a partial spill is useless.

Apparently, there were a number of problems with clean-up equipment: only seven out of the 13 oil skimmers called for in the contingency plan were available, and only 2,400 metres of the 7,000 meters of boom were ready. Chemical dispersants called for in the contingency plan and the cargo planes to disperse them were not in Valdez, among other things.

If you exercise a plan properly, these shortcomings will show up. Because the plan was not exercised, these shortcomings did not show up. People were lulled into a sense of complacency because no major events happened in 12 years.

What other major lessons are to be learned here?

There is a big problem there with training. They've already had one fatality and more than 150 injuries, some of them serious, for lack of trained people. I think it's really important that you have almost an auxiliary in place, almost a volunteer program like we have for other areas of volunteerism.

Communications — there are lessons to be learned in terms of testing systems ahead of time, and getting common frequencies. That was a major headache for about a month in terms of getting communications going up there. Also, satellite communication is not totally acceptable because it does not work on ships that move around.

Another lesson concerns the fact that our technology does not match the challenge of cleanup. The resource mapping has not occurred to a great enough extent to know what is potentially a threat so that we can respond to it effectively. I laugh when they say technology, because it boils down to people on the beach with absorbent pads, scrubbing rocks.

Oil company executives have been quoted as saying this is the price we pay for cheap oil.

They're right. We are going to have to take a long hard look at using energy,

period. One thing that really scares me right now is that every inch of available commercial boom that can be purchased in the world is in Prince William Sound. If we have a major event in Juan de Fuca Strait, or Rosario Strait, we could not deal with it.

There is a fundamental shift in attitudes required by society, through our politicians and industry, in deciding what it is that we really want to do, because the realization is that we cannot 100 per cent prevent oil spills, and we cannot 100 per cent respond to them. It just cannot be done, and it is a sad thing to have to say.

Make a note . . .

Haztech Canada (Western) — Edmonton '89

Oct. 18 - 19, 1989. The second annual conference will take place in Edmonton in the Northlands Agricom Building. The conference will provide information on regulatory, management, and technical topics, and will showcase the many facets of the industry from original generation to transportation, treatment, storage, disposal, and emergency response. For more information, please contact: Canadian Exhibition Management Inc., 4936 - 87 St., Suite 240, Edmonton, Alberta T6E 5W3. Telephone (403) 469-2400, or FAX (403) 469-1398.

Emergency Preparedness Conference

Oct. 24 - 26, 1989. The second annual Emergency Preparedness Conference is being held in Vancouver at the Sheraton Landmark Hotel. Two major areas will be highlighted: Plan, Planning and Preparedness, and Public and Private Sectors: Sharing the Responsibility. The scope of this year's conference has been broadened to include the industrial and corporate sectors as well as community facilities and agencies. For more information, contact: Emergency Preparedness Conference, George Pearson Centre, B.C. Rehabilitation Society, Win Rompf, Director of Education and Training, 700 West 57th Avenue, Vancouver, British Colum-

bia V6P 1S1. Telephone (604) 321-3231 (local 264).

2nd International Conference on Industrial and Organizational Crisis Management

Nov. 3 - 4, 1989. The conference, to be held at Leonard N. Stern School of Business, The Graduate Division, New York University, New York, will examine causes and consequences of a broad range of industrial and organizational crises. The objectives are to understand why and how these crises occur, and to develop ideas for preventing and coping with them. For further information, contact Professor Paul Shrivastava, Associate Professor of Management, New York University, Room 409, 90 Trinity Place, New York, NY 10006 - 1594. Telephone (718) 859-3435.

MIACC Annual Conference

Nov. 29 - 30, 1989. The Major Industrial Accident Co-ordinating Committee (MIACC) will hold its annual conference at the Inn on the Park in Toronto. The theme is "Working Together to Protect Canadians and Their Environment." MIACC was established in 1987 to work towards preventing a Bhopal-type incident in Canada. Its members include senior representatives from federal and provincial government departments, industry and other interest groups. For more information, contact: Michael Salib, Executive Director, MIACC Secretariat, Ottawa, Ontario, K1A 0N5. Telephone (613) 990-1133.

1990 Hazardous Material Spills Conference

June 3 - 7, 1990. This conference is the tenth in a series of national conferences held biennially on the prevention of, preparedness for, and response to accidental hazardous substance releases. Jointly sponsored by the American Institute of Chemical Engineers and National Response Team. The conference will be held at the Hyatt Regency Houston in Houston, Texas. For further information, contact AIChE Meetings Department, 345 East 47th Street, New York, NY 10017. Telephone (212) 705-7325.

Norway: A medal winner in the Olympics of oil spill recovery

Norway is a small country, whose four million people live mainly on or near the coast, which they use extensively for their livelihood, tourism and recreation. The coast itself supports a rich marine ecosystem, particularly fisheries, more than 400 fish farms, and about 70 per cent of Europe's sea birds.

It is not surprising, then, that Norway has developed an emergency response system that is perhaps second to none in the world for cleaning up ocean oil spills. As Oyvind Schreiner, head of oil pollution control for the Norwegian government, said earlier this year in Los Angeles in a speech entitled "Environmental Protection: An Area of Priority and Co-operation", "If there had been such a sport as oil recovery at sea, Norway would often have taken the top medals."

Protecting the coastal waters is a high-priority political goal in Norway. No area of the continental shelf can be opened for petroleum activity until a thorough analysis of the positive and negative impacts is submitted to the Norwegian parliament for its consideration and approval. Some areas can be declared out of bounds for petroleum activity, for example, while others might be opened only on a limited basis to avoid spawning and nesting seasons.

The strategy of Norway's oil spill emergency services is the collection of the oil spill by the use of the best possible equipment at the source, with the highest level of preparedness being in areas where there are many sensitive ecological and economic interests, and where the probability of spills is especially high.

According to Mr. Schreiner, the structure of Norway's emergency services is "dependent on a clear and unambiguous division of responsibility and authority." The environment ministry is responsible for the development of oil spill preparedness under the Pollution Control Act, which it also administers. Under the Act, oil companies are responsible for being prepared to recover any offshore oil spills from rigs. The state and municipalities are responsible

only for emergency services to deal with oil spills not covered by the private companies.

Through a public safety organization, the SFT, similar to Emergency Preparedness Canada or Alberta Public Safety Services, the state is also responsible for co-ordinating the private, state and municipal oil-spill preparedness in a national system. The coast is divided into 51 response areas, each with response plans approved by the SFT. Local municipalities are responsible for dealing only with small spills. First responders at the municipal level include police, harbour officials and local private industry. Municipalities also co-operate on an inter-municipal basis to provide mutual aid.

When a large spill occurs, an emergency operations centre is set up, headed by the director of the SFT, who is director of operations. Members include representatives from the oil industry, shippers, the armed forces, justice department and the SFT. The centre has the mandate to oversee and co-ordinate plans to give assistance where the action demands it, but will only take the lead under exceptional circumstances.

The Norwegian government set its stringent requirements for oil companies in 1976-77, before the technology even existed to meet them, spurring a united effort from industry and government to develop equipment suited to Norway's severe environmental conditions. Their efforts were galvanized by Norway's own dark environmental hour in 1977, when a major uncontrolled blowout spewed more than 22 million litres of oil into the ocean in one long week. "The incident came as a shock to a society which had little experience of petroleum activity," said Mr. Schreiner. "It made a deep impression that little or no oil spill preparedness was available to fight the spill."

Today, the Norwegian government and oil companies have a comprehensive oil spill emergency organization set up to deal with the probability of an oil well blowout occurring

once every 10 years, and oil from a large spill reaching the coastline in one to 23 days depending on conditions. They have at their disposal almost 100 kilometres of booms, 300 skimmers, oil recovery vessels and 17 large depots along the coast, and 3,000 people ready to respond. The estimated cost to date has been \$142 million.

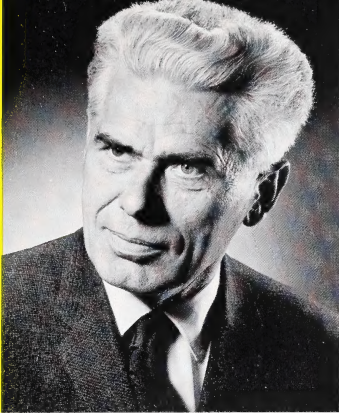
The emergency services are continually being updated, improved and exercised. Each year, the oil companies and government emergency services conduct their own spill by releasing 450,000 litres of oil and carrying out realistic exercises at sea. As a result of the staged oil spills, the Norwegians now know that in favorable weather, the oil preparedness will recover about 95 per cent of the oil which is surrounded by the booms. As wave height reaches three metres, the efficiency of the equipment decreases as the oil escapes the boom.

Staff Matters

Bev Ashton, a former secretary at the Calgary District Office of Alberta Public Safety Services (APSS), was promoted to Compliance Information Officer in Edmonton, effective June 1.

Bob Baxter, a Dangerous Goods Inspector, was transferred to the APSS Calgary District Office from Red Deer last spring. His replacement in Red Deer is **Charlie Luckhart**, who was formerly a Compliance Information Officer.

Sandra Bozman is the new secretary in the Calgary District Office.



Walter E. Harris

PCBs: A "suspected carcinogen" or "political waste"?

Viewpoint gives you, the reader, a soapbox to stand on and air your views. Start a debate: send your beefs and bouquets to Viewpoint, in care of Insight's managing editor. Views expressed here do not necessarily reflect those of Alberta Public Safety Services.

Ed. Note: Most of the following article has been condensed from one which appeared in *Folio* magazine published by the University of Alberta, and is used by permission. Maureen Payne interviewed Professor Walter Harris, Professor Emeritus and former chairman of the university's chemistry department.

PCBs — the initials stand for polychlorinated biphenyls — are a group of more than 200 similar substances which are extremely stable, chemically unreactive and of high boiling point. They have been used since 1929 in hundreds of ways, particularly for "closed uses" as the fluid in electrical transformers and capacitors. PCBs have been employed for "open uses", such as a base for printing inks, a flame retardant in lubricating oil, a plasticizer for resins and rubber and paints and waxes, a cutting oil for machine shops, microscope slide oil, and carbonless copy paper.

Hundreds of millions of pounds of PCBs have been made in the last five decades, and a large fraction of them are in the environment, where they accumulate because of their high stability and unreactivity. According to Professor Harris, trace amounts of PCBs have been found in penguins, polar bears and mother's milk, and

they are undoubtedly in your own back yard.

In 1979, the manufacturing of PCBs was banned in the United States, and their use is being phased out in Canada. Since then, the general background level has decreased. Professor Harris says the move to ban PCBs started after 1968, when about 1,000 people in Yusho, Japan inadvertently ate appreciable amounts of fluid which leaked from a heat exchanger into cooking oil. PCBs were initially blamed for the resulting skin disorders and suspicions about cancer, but further research identified the culprit as a different group of chemical compounds, polychlorinated dibenzo furans, present as impurities in the fluid that was presumably PCB.

Professor Harris, how toxic are PCBs?

Along with four million other substances, you should not eat them. To an extent, we all have been exposed at some level. (Because) they are unreactive and soluble in fat, they are not eliminated from the body quickly once ingested. The best information I can find indicates that they are enormously less toxic than, for example, cyanide or nicotine.

From rat experiments it appears they are probably about as toxic as glycol (antifreeze in our cars) and somewhat more toxic than table salt. For glycol the lethal level in humans is about 1.4 g ingested per kg of body weight (1,400 parts per million); for table salt the lethal level is probably about 4 g per kg (4,000 ppm).

In April 1985, up to 600 litres of liquid PCBs intermittently spilled from a transformer on a flatbed truck along a 248-kilometre stretch of the Trans-Canada Highway between Ignace and Kenora, Ontario. The highway was closed for four days while spill areas were cleaned and paved over, and contaminated asphalt in the towns affected was ripped up. What do you think of this response?

It was an enormous over-reaction. PCBs have even been used as a dust suppressant on roads. The hype over PCBs has got to the point where it's absolutely ridiculous. I am distressed over the extent of the waste of public resources being used to treat insignificant amounts of PCBs. You're dealing with a material that is extremely unreactive, and was used because it is so stable.

In the news media and elsewhere, we repeatedly see statements to the effect that PCBs are lethal, highly toxic, deadly, cancer-causing. Is this true?

If those were accurate descriptions of PCBs, they would indeed be frightening. PCBs have been called a "political waste" and I agree with that description. In some news media we have a virtual drumbeat of "lethal", "deadly", "highly toxic" and "cancer-causing" to the point where these distortions are widely believed to be correct.

For several years, I have been following developments and I find little to substantiate these perceptions. Human experience with PCBs is

The TRANSCAER program being developed by the Canadian Chemical Producers' Association is an excellent example of industry initiative to ensure the safe transportation of chemicals.



DOW CHEMICAL CANADA INC.

extensive. For transformer-capacitor workers in the U.S. with high long-term exposures, significant increases in any type of cancer have not been found, nor has an increase in mortality overall been observed. Experiments in which animals were forced to ingest massive doses of PCBs have indeed resulted in tumor promotion. There are many other substances (saccharin comes to mind immediately) that can be linked with cancer under similar extreme conditions.

As a result of the Yusho affair, PCB was listed as a "suspected carcinogen". It took the Japanese a decade to collect the data to find the cause of the Yusho disease (the furans), and there has been a gradual retraction of the initial reports linking Yusho to PCB (Yunita, Am. J. of Ind. Med. 5 45-58 (1984).) The level of justified suspicion about PCB and cancer has therefore decreased with time, and my impression is that the term "suspected carcinogen" now appears less frequently in reputable literature.

As a response, environmental alarmists have shifted ground and claim an expanding list of other dysfunctions. The list of claims grows faster than sound studies can possibly be carried out. No attention is paid to the results of reputable investigations of the extensive and decades-long human experience that show no evidence of human health effects, short or long term. (NIOSH Arc: Environ. Health 36, 120 (1981). See also PCB report of American Council on Science and Health, January 1985.)

It is, of course, forever impossible to

prove that PCBs do not cause cancer in humans. It is, however, irresponsible to imply that humans are under real threat of cancer from PCBs in the light of the extensive human experience and in the absence of some direct evidence. If we are under threat of cancer, I keep asking: "If cancer-causing, what part of the body is the target? If PCBs are cancer-causing, how potent are they compared with known carcinogens?"

... We don't need to search for health effects concerning arsenic, we don't need to search for health effects for strychnine or benzene or mercury or so on. I cannot imagine a paper describing searches for health effects for cyanide or for alcohol. For PCBs, my impression is that to justify the overreactions being taken, we must search for and find human health effects from the exposures that have occurred. To the extent that adverse health effects may exist, my conclusion is they have been enormously overplayed.

There are a number of unexplained, unconfirmed, or "preliminary" reports of dysfunction from PCB exposure. It is effective grantsmanship. Of course, they make great news stories and serve as continuing references for others. Press conferences are not called, however, to announce retractions or an inability to confirm sensational preliminary reports.



TRANSCAER forges link between industry and government

This fall, members of the Canadian Chemical Producers' Association (CCPA) will be studying a new report for ideas and concepts on how to set up TRANSCAER programs in communities across the country. TRANSCAER — which stands for Transportation Community Awareness Emergency Response — is a CCPA program dedicated to ensuring the safe transportation of chemicals and developing good communications with communities located on major transportation routes.

The report was being prepared this summer by the Prairie region's ad hoc TRANSCAER Committee, whose members come from Novacor Chemicals Ltd., Dow Chemical Canada Inc. and Celanese Canada Inc. The report contains the committee's recommendations and findings gathered during an unusual pilot project last spring that included visits to six communities across Alberta and Saskatchewan. (Further details will appear in the December issue of Insight, since the report was not available at press time.) In each community, the TRANSCAER team made separate presentations to first responders, representatives of local government, and the public. Participants at the meetings also included representatives of Alberta Public Safety Services or the Saskatchewan Emergency Measures Organization, and the transport sectors.

While the TRANSCAER program will

be implemented by the CCPA, the whole thrust will be on establishing a partnership and a co-operative relationship with all parties concerned. "There's no doubt that the key to the success of TRANSCAER will be through industry and government working together," said Leslie Beard, communications manager for Dow Chemical Canada Inc., and the moderator at the pilot project's meetings. "The rapport we've had with both provincial governments has been very supportive, and we've never felt we were working on opposing sides."

Paul Chambers, a member of the ad hoc committee and TRANSCAER coordinator for Dow Chemical Canada Inc., Western Canada Division, said the best result of the pilot project was probably the personal contact and communication it encouraged. "You got the feeling that people now associated a face with the chemical industry and the government," he said. "You could see a real link was being created."

The information sessions for first responders were particularly well received and attended, with the turnout ranging from 14 to 61 people. First responders, including fire departments, police, ambulance workers, medical and hospital personnel and local officials were presented with a three-hour information session and video on how to handle the initial response to incidents involving dangerous commodities. The session was so well received, in fact, that two of the communities invited the TRANSCAER team back to make additional presentations.

"The way these people respond init-

ially to an incident until fully trained personnel can arrive can make or break the way it is resolved," said Ms. Beard. Because of the success of the first responder sessions, consideration is being given to holding them on an ongoing basis in communities.

Local councillors and mayors, who received a short 15-minute presentation on TRANSCAER, were also supportive.

TRANSCAER organizers were surprised, however, at the low response to their public meetings, particularly since they followed close on the heels of a series of well-publicized chemical spills. Despite ads in local newspapers, posters, and news releases, three of the five public meetings held attracted just a few people, with the highest turnout being 13 people in Wainwright. "I'm not sure if it's apathy or confidence," Mr. Chambers said. The one consolation was good media coverage in all the communities visited.

Ms. Beard said that upcoming TRANSCAER initiatives will continue to include a commitment to the public, but might take a different form, such as working through existing community organizations. In Hinton, for example, the public forum was replaced with a meeting with the local Chamber of Commerce, at the chamber's request. That meeting was an outstanding success, drawing 87 people — double the usual attendance at chamber meetings — from a wide area around Hinton.

TRANSCAER and CAER — Community Awareness and Emergency Response — are both programs of the CCPA's Responsible Care initiative.

CAER aims to foster co-operation between communities and industry where there are fixed facilities, such as chemical plants and warehouses, and to develop integrated emergency plans for those communities. TRANSCAER has similar aims but focuses on communities along transportation corridors.

The Responsible Care initiative requires member companies of CCPA to make "a commitment to the responsible management of chemicals through all aspects of their life cycle so as to minimize adverse effects on human health, well being and the environment."

Schools closed after spill

A tractor-trailer unit that rolled over and spilled about 2,000 litres of gasoline near Innisfree on April 18 resulted in the cancellation of classes at two nearby schools.

The incident occurred in the morning, at the junction of a road near Innisfree and Highway 16, and police detoured highway traffic around the spill until the cleanup was completed around 4 p.m. The Vegreville Fire Department, the RCMP, and an oil company's emergency response team responded to the incident.

The driver, who was from Saskatchewan, has been charged with driving without due care and attention.

Preparedness is still the best defence to minimize the results of natural and human-made disasters.



Emergency Response in Canada

by T. D'Arcy Finn, Q.C.
Executive Director,
Emergency Preparedness Canada

The following presentation was delivered by Mr. Finn at the Dangerous Goods Emergency Response '89 Conference in Halifax on May 16.

At a recent international congress held in London, England, attended by representatives of 40 nations to exchange information on emergency preparedness, one of the most engrossing presentations was given by the Medical Adviser to the Swiss-based International Civil Defence Organization. Using statistics, he showed graphically that in countries where measures for meeting the effects of natural and technological hazards have been instituted, the percentage of injuries, death and damage has been reduced dramatically. If we ever needed a persuasive argument for spending money up front on emergency preparedness and public awareness, this is it.

Such thinking mirrors the philosophy of Emergency Preparedness Canada and is enunciated in the preamble to Canada's new *Emergencies Act*. This states: "The safety and security of the individual, the protection of the values of the body politic and the preservation of the sovereignty, security and territorial integrity of the state are fundamental obligations of government."

One of the objectives of the organization I head is to encourage a uniform standard of emergency preparedness across the country to mini-

mize the results of natural and human-made disasters. We do this in a number of ways, including funding joint projects with the provinces and territories, through public awareness, training and education, and through sharing the results of research.

We are not a big federal department, although we have a big job to do. And what we do forms the umbrella for the federal response to emergencies, including those arising out of the manufacturing, storage and transportation of dangerous goods.

Unlike some national emergency organizations, Emergency Preparedness Canada does not normally *manage* the response to emergencies. Rather, we are responsible for *co-ordinating* the development of federal civil emergency plans to an appropriate state of operational readiness to meet emergencies.

Civil emergency planning in Canada is based on an all-hazards approach and on the premise of graduated response.

The all-hazards approach is based on the fact that the effects of disasters are generally similar, regardless of the cause: people are left homeless, require medical attention, food, clothing and shelter.

First, it is up to the individual to know what to do in an emergency. If the individual cannot cope, the local municipal government takes over. It is the responsibility of each Canadian mayor to ensure that his or her city has an emergency plan to cope with

the events most likely to affect the city. Incidents involving the transportation of dangerous goods would be on the list of many cities, especially if they are on major transportation routes.

In an incident involving dangerous goods (or for any other kind of emergency), if help is required from surrounding municipalities, or from the provincial government, it is requested and provided in accordance with a pre-arranged plan.

If the emergency cannot be managed within the province or territory, or if, by the nature of the emergency, it has federal or national implications, then the resources of the federal government can be brought to bear.

The Government of Canada works on the lead agency principle when responding to crises. Each department, agency and Crown corporation is required to plan and prepare for emergencies related to its normal area of responsibility. For most emergencies, it is known in advance which department or agency will take the lead role in the federal response. For example, in airport crashes, it would be Transport Canada, while for Chernobyl-type releases of radioactive material, it would be Health and Welfare Canada. However, when the lead department or agency is not obvious, the Prime Minister will name a Minister and thus, a department to assume the lead on behalf of the federal government. In many incidents, such as a fire in a warehouse storing PCBs, the role of the federal lead department

would be to co-ordinate field support for the provincial government. This could take the form of analysing soil, air and water samples to determine the degree of contamination; or federal help could lie in providing, or arranging the provision of, special equipment or transportation to help deal with the problem.

In any serious incident, including those involving dangerous goods, Emergency Preparedness Canada staff at the Government Emergency Operations Co-ordination Centre are among the first to know about it. The centre is in our headquarters in Ottawa. Staff monitor the news media and scan reports from a network of provincial and federal contacts. Our sophisticated state-of-the-art equipment ensures rapid gathering and dissemination of information to the appropriate federal departments and agencies.

If a federal response is required, the centre, which functions around the clock, can serve as an electronic focal point for emergency government operations. The co-ordination centre is a channel for operational communications, and a place from which senior officials can co-ordinate support, analyze the situation, and respond to changing emergency conditions.

The best defence, to prevent emergencies from becoming disasters, is preparedness: good planning, exercising those plans, training your people, mapping out the scenario in advance, knowing what to do and who will do it, are keys to mitigation and rapid response. We instill these principles in the 110 courses given at our Emergency Preparedness Col-

lege about 40 miles west of Ottawa. We give courses to 3,000 people annually, many of them mayors and elected officials. We tell them about their responsibilities in emergencies and teach them how to analyze the hazards, how to draw up a plan and how to implement it. We receive a surprising number of letters from those who have been on our courses.

In the aftermath of the Bhopal tragedy, we in Canada formed a committee comprising representatives from government and industry to examine the potential for major industrial accidents in Canada and to improve the collective ability to prevent and respond to such incidents. In May 1987, at the instigation of Emergency Preparedness Canada and a fellow department, Environment Canada, and working closely with provincial colleagues, it was decided to strike a steering committee as a prelude to forming the Major Industrial Accident Co-ordinating Committee (MIACC). My organization helped arrange a meeting in Ottawa in November 1987 to determine the MIACC mandate and terms of reference. The steering committee, which EPC co-chaired in 1988, and several of its working groups, have met regularly since then. The first MIACC annual meeting was held in Ottawa toward the end of November 1988, attracting 150 delegates from government and the private sector. Fruitful discussions are being translated into action plans for ensuring that the chance of a major incident involving dangerous goods in Canada is absolutely minimized and if, with all the good planning in the world, there were a major incident, at

least it could be contained quickly and effectively.

We in Canada subscribe very strongly to the idea that prevention is better than cure, especially as it applies to dangerous goods.

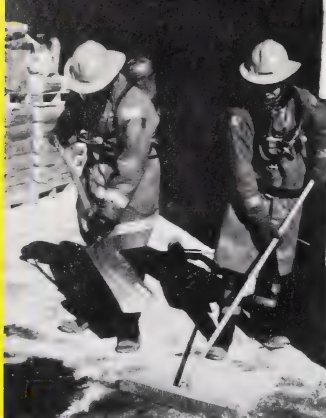
A preventable accident wastes time

Even a so-called minor accident involving dangerous goods has serious consequences because the recovery can be time consuming and difficult.

In a recent case, a unit carrying ammonium nitrate fertilizer left the road and rolled into the ditch near Ponoka. Even though a spill did not occur, there was major damage, and the unit had to be partially unloaded before recovery could take place. Two wreckers, and people with years of expertise, were needed to right the tractor and trailer units.

The incident occurred at 3:30 a.m. on June 24 and was not finalized until 8:30 p.m. that evening, a total of 17 hours. This meant emergency crews were tied up for a considerable length of time, and the highway was partially closed, thereby increasing the risk of Murphy's Law taking effect and further accidents happening.





Emergency Response to Chemical Spills: A selected bibliography of materials available from the Alberta Public Safety Services Library

Compiled by Teresa Richey, APSS Librarian

Each issue of *Insight* includes a bibliography of selected materials on a subject of current interest. The bibliographies are arranged alphabetically by title and include a brief annotation where necessary. To borrow material listed, send an interlibrary loan request form to Alberta Public Safety Services Library, 10320 - 146 Street, Edmonton, Alberta, Canada T5N 3A2 or telephone (403) 451-7178. Materials located in the Compliance Information Centre or the Main Library-Reference cannot be borrowed but can be referred to in the library. The library staff is always looking for good bibliography topics, and appreciates suggestions. If you would like to see a bibliography on a certain subject, please let the staff know and they will try to accommodate your request.

Cashman, John R. **Hazardous Materials Emergencies: Response and Control** rev. 2d ed. Lancaster, Pennsylvania: Technomic, c1988. 390 p.

T 55.3 .H3 C37 1988, MAIN LIBRARY

Contains guidelines for developing procedures for the isolation, containment, and stabilization of hazardous materials unintentionally released from their normal environments. Contains case studies and ideas for developing emergency response libraries.

Cleanup Guidelines for Commonly Spilled Hazardous Materials In Alberta. Edmonton Alberta: Alberta Environment, 1983. 178 p.

T 55.3 .H3 C59, MAIN LIBRARY

Dangerous Goods Guide to Initial Emergency Response 1986. Ottawa, Ontario: Transport Canada, 1986. 132 p.

HE 199.5 .D3 p362, 1986, MAIN LIBRARY - REFERENCE

A Guide to the Safe Handling of Hazardous Materials Accidents. Philadelphia, Pennsylvania: American Society for Testing and Materials, c1983. 55 p.

HE 199.5 .D3 G85, MAIN LIBRARY

Hazardous Materials Emergency Planning Guide. Washington, D.C.: National Response Team, 1987. 122 p.

T 55.3 .H3 H394, Compliance Information Centre

Newton, Jim. **A Practical Guide to Emergency Response Planning.** Northbrook, Illinois: Pudvan, c1987. 163 p.

HV 553 .N48, MAIN LIBRARY

Proceedings. 5th Technical Seminar on Chemical Spills, February 9-11, 1988, Montreal, Quebec. Ottawa, Ontario: Environment Canada, c1988. 384 p.

T 55.3 .H3 T42 1988, MAIN LIBRARY

Papers presented include various subjects under the fate and effects of chemical spills, spill counter-measures, spill prevention and public protection, spill detection, contingency planning, risk assessment, and appropriate response to specific types of spills. National, American and European contributors.

Proceedings. Dangerous Goods Emergency Response '86, September 14-18, 1986, International Plaza Hotel, Vancouver, Ottawa, Ontario: Canadian Chemical Producers Association, 1986. 314 p.

T 55.3 .H3 D361, MAIN LIBRARY

A series of papers on topics of interest about dangerous goods transportation accidents including communication technologies, information networks, response planning, training, site management, and contamination recovery techniques. Marine, river and land spills discussed.

Proceedings of the Second Annual Technical Seminar on Chemical Spills. Ottawa, Ontario: Environment Canada, 1985. 394 p.

T 55.3 .H3 T42 1985, MAIN LIBRARY

Quarantelli, E.L. **Sociobehavioral Responses to Chemical Hazards: Preparations for and Responses to Acute Chemical Emergencies at the Local Community Level.** Columbus, Ohio: Disaster Research Center, 1981. 133 p.

HV 559 .Q37, MAIN LIBRARY

Ronk, Richard, Colleen Herrington, and Beth Diguistino. **Selected Bibliography for Haz Mat Responders.** Morgantown, West Virginia:

National Institute for Occupational Safety and Health, 1987. 9 p.

Z 7914 .H39 R66, MAIN LIBRARY - REFERENCE

Shaver, Deborah K. and Robert L. Berkowitz. **Post-accident Procedures for Chemicals and Propellants.** Park Ridge, New Jersey: Noyes, 1984. 236 p.

T 55.3 .H3 S52, MAIN LIBRARY

Final technical report to the United States Air Force and Federal Railroad Administration making recommendations for developing technology to minimize hazards associated with the spills of 28 chemicals and propellants. Divided into five sections covering general guidelines, initial response and chemical data, hazard assessment, hazard mitigation, and cleanup and disposal. Includes references, glossary, acronyms and terms.

Smith, Al J. **Managing Hazardous Substances Accidents.** New York, New York: McGraw-Hill, c1981. 188 p.

T 55.3 .H3 S65, MAIN LIBRARY

General text designed to provide an approach to developing management plans, cleanup technology, assistance systems, and public information plans in the event of a hazardous substance accident.

Solsberg, L.B. and R.D. Parent. **A Survey of Chemical Spill Countermeasures.** Ottawa, Ontario: Environment Canada, 1986. 392 p.

T 55.3 .H3 S64, MAIN LIBRARY

A guide to containment, removal, storage, transfer and disposal of spills. Information given on equipment in design stage, prototypes, and commercially available. Indexed by operation, and company, and includes appendices of cleanup contractors and Canadian chemical suppliers.

Terrien, Ernest J. **Hazardous Materials and Natural Disaster Emergencies: Incident Action Guide-book.** Lancaster, Pennsylvania: Technomic, c1984. 64 p.

HV 553 .H39, MAIN LIBRARY

Tierney, Kathleen. **Chemical Emergencies, Offsite Exposures, and Organizational Response.** Boulder, Colorado: Natural Hazards Research and Applications Information Centre. (Quick Response Emergency Report 21), 1987. 24 p.

HD 58.7 .T53, MAIN LIBRARY



JOHN SCHUTZ

The containers involved in this sodium dichromate spill along Highway 831 last March have now been banned.

Pioneer “tote tanks” banned for transporting dangerous goods

As a result of concerns raised over the performance of the container involved in the Highway 831 spill of sodium dichromate last March, Transport Canada, in consultation with Alberta Public Safety Services, conducted a series of tests on a large sample of portable bulk containers, known as “tote tanks”, to determine their compliance with a Canadian Transport Commission special permit authorizing their use in dangerous goods service.

The results of the testing raised sufficient concerns that Alberta Public Safety Services issued a series of Stop Orders to companies using the tanks, manufactured by one company, in dangerous goods service for road transport in Alberta. The text of the Stop Order reads as follows:

Take Notice That:

I, Wayne W. SMITH, being a person employed by the Dangerous Goods Control Division of the Alberta Public Safety Services, and being a person duly designated for the purpose of making a direction under Section 12 of the Transportation of Dangerous Goods Control Act, Chapter T-6.5, Statutes of Alberta, do hereby direct COMPANY NAME in the interest of the protection of public safety, property or the environment, to immediately, upon

receipt of this stop order, cease the activity of handling or offering for transport any quantity of dangerous goods in any intermediate bulk container constructed or manufactured by Pioneer Plastics and Services Co. Ltd., under the authority of special permit CTC SP 1946, issued pursuant to Section 71.6(a) of the Regulations for the Transportation of Dangerous Goods Commodities by Rail.

The containers in question were manufactured by Pioneer Plastics and Services Co. Ltd., or Pioneer Plastic Corporation, and display the marking CTC SP-1946 or DOT E-9340.

The Dangerous Goods Directorate of Transport Canada has issued a federal “protective direction” (very similar to the Alberta Stop Order) prohibiting the use of this manufacturer’s tanks in dangerous goods service, for any mode of transport throughout Canada. The U.S. Department of Transport has not renewed the special permit for the Pioneer tanks, and thus they cannot be used in either country for the transport of dangerous goods.

Companies that use these containers in non-dangerous goods service, and are concerned as to the integrity of the containers, can obtain copies of the inspection report from Transport Canada.

Being prepared for dangerous goods incidents:

A guide for communities

by Ralph Holmes,
Co-ordinator, Industrial Programs

There are two factors to consider in deciding if your community requires a dangerous goods response team: first, the level of response required, which is accomplished through developing a dangerous goods plan to prepare for possible emergencies. The second major factor is expense: it can easily cost more than \$1 million to set up a team, and an additional \$1 million a year to operate it. Smaller communities may wish to train their responders to a basic level and pool resources with other communities and/or industry to have the response capability identified as required in the dangerous goods plan.

A dangerous goods plan is of immeasurable value to a community, particularly since it is almost always on its own in the first stages of a dangerous goods incident. The plan will identify the hazards and the community’s ability to respond and control the situation. If the situation is beyond the resources of the community, then the plan will determine what specialized assistance is required and how to access these resources. In either case, public safety will be improved because the plan will provide the information required to best deal with the emergency.

Fully encapsulated suits such as these can cost up to \$5,000 each. Since every member of the minimum four-person dangerous goods response team needs up to five suits, the total price tag can reach \$100,000 just to outfit the team.



What is a dangerous goods response team?

A dangerous goods response team includes at least four persons who have the technical training and specialized equipment required to contain and control an accidental release or discharge of dangerous goods. The team's first priority is to protect the lives of both the public and the other emergency responders at or near the site of the dangerous occurrence. (Dangerous goods are products, substances or organisms which present a potential hazard to life, health, property and/or the environment. The federal Transportation of Dangerous Goods Act groups dangerous goods into nine classes, such as explosives, flammable liquids and radioactive materials.)

The National Fire Protection Association (NFPA) defines four levels of dangerous goods responders. Level I is an awareness level; this provides first responders with basic information to be able to recognize a dangerous goods incident and to protect and secure the scene in order to protect the public. Level II is the basic operational level; Level III is the operational level for a dangerous goods specialist; and Level IV is the advanced level involving extensive training at the supervisory level.

The Planning Process

Once a planning committee has been selected by the community, the process for preparing a dangerous goods plan can begin. This process involves four major phases:

- assessing the community in order

to identify potential hazards and its vulnerability;

- identifying the community's resources and response capability;
- reducing hazards where possible and improving response capability; and
- developing, writing, auditing, implementing and integrating the dangerous goods plan, plus keeping it updated by testing it.

I Assessing Your Community

The first step for a municipality to follow in preparing a dangerous goods plan is to organize a planning committee, which is already established in the form of the local disaster services agency. This local agency must have both the authority and resources to implement a plan. Developing a plan will require the expertise of representatives from the community's governing body, other orders of government as required, the fire department, police department, medical services, public works, local industry, transportation industries (rail and road), local media, and technical experts. The planning group starts by setting its objectives, and drawing up a work plan and timetable for achieving its goals.

The Hazard Analysis

The planners' first assignment is to go on a fact-finding mission and identify the hazards in the community.

1a. **Hazard Identification** includes identifying the types, quantities and locations of dangerous goods which are transported through the community or found in places such as industrial facilities, hospitals, water and

sewage treatment plants, warehouses, school labs, swimming pools, skating rinks, agricultural facilities, stores, trucking terminals, railroad yards, and on rail and road transportation corridors. Priority must be given to the dangerous goods which have the highest potential of causing death or injury, with secondary consideration given to those that will cause damage to property and the environment. Problem areas can be clearly shown by plotting the locations of dangerous goods on a map.

1b. **Vulnerable Areas Analysis** The planning committee next identifies vulnerable areas of the community that would be at risk if a dangerous goods release or incident occurred at any of the locations identified in its previous research. In looking at the consequences, or total impact on the community, the planners need to consider a number of factors, such as the location, type and quantity of dangerous goods, weather, as well as the locations of schools, hospitals, and nursing homes, where people might require immediate attention. Sensitive environmental areas, such as wildlife reserves, watersheds and recreational areas, must also be considered.

1c. **Risk Analysis** Using the information collected in the hazard identification and the vulnerable areas analysis, the planning group assesses the probability of events occurring. The risk analysis also includes an in-depth look at a number of areas, including the consequences to people exposed to chemical releases, the possibility of unusual environmental conditions and multiple emergencies.

II The Capability Assessment: An Inventory of Resources

A second stage in the community assessment process is an evaluation of the community's preparedness and response capability. In particular, all resources in the community and local industry, as well as those outside the community, are assessed for the purpose of co-ordinating and using all available resources in the event of an emergency.

1. Community Resources The community's resources include both human and material resources. Human resources are those people who have the knowledge and experience to handle a dangerous occurrence, as well as those who assume the other duties which arise in an emergency situation. Material resources include all necessary emergency response equipment.

Other resources may include local industry, the media, toxicological expertise from educational institutions or industry, and meteorological information. The different resource groups should be included in the plan and know their roles and responsibilities in the event of an emergency.

2. Industrial and Outside Resources An invaluable resource area to tap is the industries located in the community. Local industries may have considerable expertise with certain dangerous goods and a response capability so it is important to develop co-operative actions with them. The industries will have their own emergency site plans, which should be integrated into the overall community plan, as well as a great deal of specific information about dangerous goods in the community, including health effects and actions to take in the event of a spill or release.

Outside resources may include mutual aid agreements with other fire departments which have a dangerous goods response capability, and

industrial emergency response teams (such as the Transportation Emergency Assistance Plan, or TEAP, and the Chlorine Response Team, or CHLORREP).

Provincial resources and other information may be accessed through the Compliance Information Centre at Alberta Public Safety Services, which operates 24 hours a day, seven days a week (422-9600 in Edmonton, or 1-800-272-9600 toll-free in Alberta).

III Reducing Hazards and Improving Response

1. Risk Reduction Those situations identified through the hazard analysis can now be matched with the resources of the community, and actions taken to reduce the existing level of risk in the community. Priority should be given to those high-risk situations which the community is not prepared to handle. This approach can be achieved by various methods.

Co-operation between industry and the community can, for example, result in the reduction of some hazards for a facility located within that community. These actions may include the substitution of safer chemicals at the facility, the reduction of the quantity of dangerous goods stored at the facility, product awareness and public education. Public education is an important and often overlooked aspect of a dangerous goods plan. The public itself must be aware of the plan, know what the emergency alerting signal means and what to do. Some communities use a siren to alert, and radio stations to advise and give instructions.

Community activities can include zoning by-laws concerning site location and allowance for buffer zones, evacuation plans, and working with industry concerning awareness and public education. For those hazards presented by dangerous goods travelling by road, the community can

enact by-laws which control the routes used by transporters of dangerous goods.

2. Response Improvement For those situations that risk reduction methods do not address, improved response capability may be required. If outside resources are to be used, it is important that the plan addresses the actions required while waiting for the outside response team to arrive. Municipalities are responsible for all costs incurred in calling outside resources. Another option is to train and equip the municipal response team of your community to handle the potential high risk hazards that have been identified by the risk analysis process.

IV Writing and Implementing the Dangerous Goods Plan

A written plan is necessary to become the standard operating procedure for the community to follow in the event of a dangerous goods incident. The plan will identify the command structure that will be followed and clearly identify the roles of all participants included in the plan.

Once the plan has been developed, it should be audited by people with experience in dangerous goods response and municipal emergency planning. Another method used to audit the plan is to run a table-top exercise which will eventually lead to the conducting of a full-scale exercise.

Upon completion of the audit, the dangerous goods plan should be integrated with other existing emergency plans.

Above all, a community's preparation of a dangerous goods plan is not a one-shot affair. To be effective, the plan should be maintained, tested and updated annually.

Sodium Dichromate

Without the benefit of corrosion inhibitors, pipes and heat exchangers and other equipment used in cooling water systems around power and chemical plants would be forced to operate in a very hostile environment. The addition of a small quantity of sodium dichromate to the cooling water can help to extend the life of this equipment from weeks to years.

Pure sodium dichromate, $\text{Na}_2\text{Cr}_2\text{O}_7$, or sodium bichromate, is a red crystalline solid. It is very soluble in water and is often shipped to the end user as a solution. Other uses for this chemical include leather tanning, electroplating and as an intermediate for the manufacture of other related chemicals.

As is often the case with industrial chemicals, the material needed to protect the equipment has the opposite effect on plants and animals. Sodium dichromate, a strong oxidizer, is also corrosive and toxic. Chromate salts have been identified with skin, liver and kidney damage, and are a suspected carcinogen. Protective clothing such as goggles, rubber boots, gloves and apron, and a dust mask should be worn when this material is handled.

Sodium dichromate can cause corrosive injury to the eyes, nose and skin. Although sodium dichromate is not toxic enough to be regulated as a poison by the Transportation of Dangerous Goods Regulations, poisoning is a very real possibility if it is ingested, inhaled or absorbed. A person contaminated with this product should wash the affected area and rinse thoroughly with large volumes of water. Soiled clothing must be removed. If the material gets into the eyes, they must be flushed, without delay, by flooding them for 15 minutes with clean water. When ingestion is suspected, the victim should be given water to drink and medical assistance sought. Inducing the victim to vomit is not recommended, though it may occur naturally.



Primary Classification: 5.1

UN: 1479

Packing Group: II

Sodium dichromate itself is non-flammable, although as an oxidizer in a fire situation it will decompose and release oxygen, which will contribute to the fire. It can be flooded with water, but this creates a clean-up problem after the fire is out. Some thought should therefore be given to possible pollution problems before the fire is attacked.

All chromium compounds are harmful to the environment, a fact which has limited their usefulness. Spills must be contained by dyking and protecting sewers, and limiting the spread of the material. Any contaminated soil must be treated as hazardous waste. The supplier and Alberta Environment should be contacted for advice on cleanup.

When transported, sodium dichromate uses the shipping name Oxidizing substances, solid, n.o.s. (Sodium dichromate), UN1479, and is included in Class 5.1 (oxidizer), with a subsidiary classification of 9.2 (environmentally hazardous substance). It is assigned to Packing Group II.

Sodium dichromate solutions will be either "Oxidizing substances, liquid, n.o.s. (Sodium dichromate), UN1479, Class 5.1, (9.2), Packing Group II", (bulk shipment prohibited by special provision 48), or "Environmentally hazardous substance (Sodium dichromate)", Class 9.2, Packing Group II. Class 9.2 products may be exempted from the regulations for road and rail shipment if they are in a quantity which is below the "regulated limit". In the case of dilute sodium dichromate solution, this quantity is 50kg.

Motor Transport Services: Helping motor carriers meet their responsibilities

The Motor Transport Services of Alberta Transportation and Utilities — the province's fourth largest law enforcement agency and an example of co-operative enforcement — is fully committed to administering the road mode aspects of the dangerous goods program.

Motor Transport Services objectives can be summed up in three functions: service to the public, inspections, and national uniformity in the administration and inspection activities. These latter activities involve comprehensive dangerous goods requirements and the National Safety Code standards.

To achieve maximum efficiency with both of these important safety programs, the personnel of Motor Transport Services attended a three-day dangerous goods training course offered by Alberta Public Safety Services (APSS) on the legal requirements and officer safety. This course was supplemented one year later with a one-day hands-on refresher course. Personnel also receive continuing on-the-job training from APSS facility inspectors who provide assistance during commodity checks at the 19 vehicle inspection stations.

This training has prepared the Motor Transport Services personnel for providing educational and technical assistance to the motor carrier industry, while at the same time utilizing enforcement as a last resort to obtain compliance.

The personnel of two key units of the Motor Transport Services — Field Operations, and Investigations and Audits, have successfully implemented the two programs, and it is to these members whom the motor carrier industry will look to for guidance and advice. For the most part, corrective action consists of encour-

raging co-operation to assist the transportation specialist in meeting the responsibilities imposed by the dangerous goods requirements.

When non-compliance is found, corrective action can be taken by issuing warning tickets as well as the laying of charges. All contraventions of the dangerous goods requirements reported to Alberta Public Safety Service are acted upon. The notifications are all recorded in APSS company profiles, before being forwarded to the Facility Inspector for information or for followup investigations. Regardless of the followup investigations by the facility inspectors, the issuing member is advised of the outcome of the inquiries, whether it be a verbal or a written warning, or the laying of charges.

All motor-carrier dangerous-goods contraventions reported to APSS are later forwarded to the Alberta Motor Transport Board. These reported contraventions then become part of the motor carrier's fitness record.

Is the process working? Yes. Motor Transport personnel are on the average reporting 20 to 25 dangerous goods contraventions per month to APSS. In April, partly as the result of followup investigations by Alberta Public Safety Services, an Alberta motor carrier had its operating authority for Alberta withdrawn.

North American inspection blitz aims to ensure safety

Canada and the United States conducted a continent-wide inspection of commercial vehicles for the 72 hour period from May 16-18. The safety checks were conducted at 160 locations in nine provinces, 47 states and Puerto Rico by a total of 1,836 law enforcement personnel.

The main purposes for the international inspections were to ensure safety on the public highways, reduce dangerous goods incidents and commercial vehicle involvement in accidents by removing potential causes of accidents. The statistical data gathered also provided a three-day North American snapshot of the commercial vehicle and dangerous goods compliance ratios.

All inspectors followed the same roadside inspection procedures. In this way, serious safety defects or drivers with serious safety violations were put out of service until the

condition was remedied.

A summary of the results of the checks is as follows:

Total Vehicles	31,522
Inspected	
Vehicles Put Out of Service	10,134 (32.1%)
Drivers Put Out of Service	1,908 (6.1%)
Total Violations	73,311

Co-ordinated support of the joint Alberta/Montana inspections at Coutts, Alberta and Sweetgrass, Montana was provided by Motor Transport Services, Alberta Public Safety Services, the federal Department of Environment, Montana Highway Patrol and the U.S. Federal Highway Administration personnel. Alberta personnel inspected northbound carrier traffic, while the Montana personnel conducted inspections of southbound vehicle traffic.

The results of the Alberta/Montana inspections are:

	Alberta	Montana	TOTAL
Dangerous Goods Vehicles Checked	99	25	124
Other Commercial Vehicles Checked	344	209	553
Totals	443	234	677
Vehicles Put Out of Service	75 (16.9%)	2	77
Drivers Put Out of Service	2 (.05%)	3	5
Dangerous Goods Violations	6 (6.1%)	2 (8.0%)	8

1989 Course Schedule

Alberta Public Safety Services Training School

September 12 - 14	#8918	Dangerous Goods Orientation
September 20 - 21	#8919	Disaster Social Services
October 17 - 19	#8920	Disaster Health Seminar
November 14 - 17	#8922	Emergency Site Management
November 14 - 17	#8923	Emergency Response Public Information Officer
November 20 - 24	#8921	Rescue Leaders
November 29 - 30	#8924	Disaster Social Services

An Emergency Preparedness Canada Plans and Operations (Peace) course is now being planned for delivery at the APSS Training School October 16 - 20. It will be open to candidates from the four western provinces.

In addition to these courses, the Alberta Public Safety Services Training School also offers 35 basic rescue courses and 25 dangerous goods awareness courses. Anyone interested in attending a course should apply to the Director of Disaster Services in their municipality.

For further information, contact:

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Edmonton, Alberta
T5N 3A2
(403) 422-0346



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